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BCStats

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Measuring Green Collar Jobs in British Columbia

While the issue of climate change is one that is hotly debated and has its share of sceptics, there is no denying that the provision of goods and services related to preserving and protecting the environment offers tremendous economic opportunities. According to Statistics Canada, Canadian industries earned approximately $18.5 billion in revenue from sales of environmental goods and services in 2004.[1] Globally, it is estimated that the market for environmental goods and services is around US$1,370 billion per year and will double by 2020 (Worldwatch Institute, 2008, p. 5).

Given this burgeoning environmental sector, it would be useful to know just how many jobs it supports. Unfortunately, deriving a count of "green" jobs is not a simple matter. There is the difficulty of not only developing a definition of what comprises a green job, but also of coming up with a definition that allows for relatively easy measurement.

There have been a number of studies reporting counts of green employment in the United States that have used widely varying definitions and, as a result, have arrived at quite different measurements. The substantial variation occurs because there is more than one legitimate approach to defining green jobs and because there is no standard definition of what is to be considered "green."

A simple approach would be to assume all people employed in green industries are environmental employees, but then a definition of what comprises a green industry is needed. This would also raise the question of whether it makes sense to classify someone such as a file clerk or a truck driver working for a green business as working in a green job. However, if the end goal is to count the number of people employed in green industries, rather than green jobs per se, this method would probably be the simplest in terms of getting something quantifiable.

Unfortunately, the current industry classification system employed by Statistics Canada (the North American Industry Classification System, or NAICS) is not fine enough in detail to construct a proper definition of green industries. That is, while there are a couple of industries that are clearly environmental (for example Environmental Consulting Services), most of them will have other types of businesses that plainly are not environmental.

For example, the industry classification NAICS 335990 – "All Other Equipment and Component Manufacturing" contains fuel cell manufacturers, which as an alternative fuel source certainly fits the bill of an environmental industry. However, fuel cell manufacturers comprise

[1] Source: www40.statcan.gc.ca/l01/cst01/envi31-eng.htm

only a portion of the overall industry, which also includes activities such as manufacturing of electric chimes, electric fence chargers, door opening and closing devices and so on. It would be difficult to justify including these activities in any definition of environmental industries. To do a proper count of green industry employment using readily available data from Statistics Canada, a methodology would have to be developed to determine shares so that the green components of industries could be split from the non-green portion. One way to do this would be to conduct a survey. Since these proportions are likely to change over time, this survey would have to be repeated periodically to update the ratios.

If the goal is to count actual green jobs, as opposed to employment in green industries, then the industry-based method will not be appropriate. Rather, a definition of green jobs based on occupations would have to be developed. One way to look at this would be from the standpoint of occupations with duties that are environmental in nature; for example, conservation officers, water inspectors and recycling program co-ordinators, to name a few.

Another approach would be to look not at the task associated with an occupation, but rather the outcome of that task. For example, a construction employee working on retrofitting a building to make it more energy efficient, or an automobile manufacturing employee working on assembling electric cars would both be considered green employees under this approach. This, in fact, is the method used in several studies in the United States (For example, EMSI, 2008; Hardcastle, 2009; Pollin et al, 2008).

The concern with the second approach is that the occupational definition will include a number of occupations, such as sheet metal workers, automobile assembly workers and so forth, that are largely comprised of jobs that would not generally be considered green. As such, using this approach has the potential to significantly overestimate the number of green workers. In fact, the definition would include some workers employed in environmentally-damaging sectors, such as the manufacture of high gas consumption automobiles or the construction of manufacturing facilities with substantial emissions of pollutants. The first method, on the other hand, would underestimate the number of environment-related jobs by excluding those who work in occupations that are not strictly green, but have green outcomes.

Yet another difficulty in arriving at a definition of green occupations is the distinction between environmental employment and so-called "green collar" jobs. There are those that insist that to be considered a green collar job, it must be a full-time position with "adequate wages, safe working conditions, job security, reasonable career prospects, and worker rights." (Worldwatch Institute, 2008, p. 4) Their reasoning is that "A job that is exploitative, harmful, fails to pay a living wage, and thus condemns workers to a life of poverty can hardly be hailed as green." (Worldwatch Institute, 2008, p. 4) A real life example would be the children in Ghana that extract the valuable materials from electronic-waste without any safeguards against the toxic materials contained in that waste (see Carroll, 2008). They are performing an environmental job (recycling), but their work conditions are dangerous and the pay is not commensurate with the risks.

While it is not necessarily a requirement to arrive at a consensus before developing a definition of green jobs, there is still a further obstacle to overcome. Similar to industry codes, the occupational coding system used by Statistics

Canada (National Occupational Classification, or NOC-S) does not have sufficient detail to construct a proper definition of green occupations. For example, a green occupation such as an energy conservation engineer is part of the larger occupational grouping of mechanical engineers, not all of whom could be considered green workers. As a result, a definition constructed using NOC-S codes would necessarily overestimate environmental employment.

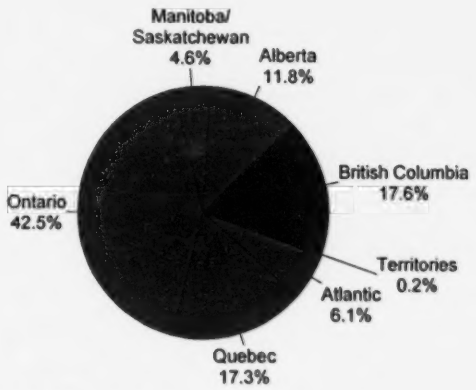
Given the issues of not enough detail in either the industry or occupation coding systems, the ability to use readily available statistics to measure the number of green jobs is seriously hampered. This indicates that the best approach to develop counts of green jobs is probably to undertake a survey, either to estimate a direct count of green employees or to develop ratios to apply to these existing data sets.

In Canada, ECO Canada conducted just such a survey that estimated the number of environmental employees across all major industries in Canada. The survey employed a definition developed earlier by the Canadian Council for Human Resources in the Environment Industry (CCHREI, which later became ECO Canada):

> Environmental employment is the performance of employment activities that seek to manage the use of, impact on, and enhance the sustainability of the environment. These activities, which could relate to the governance of environmental activities, the supply of environmental products and services, or the development and dissemination of environmental knowledge may be categorized in any of the following sectors:
>
> a) environmental protection,
> b) conservation & preservation of natural resources, and
> c) environmental sustainability.
>
> (CCHREI, 2004)

The results of the survey were applied to other data sources such as Statistics Canada's Labour Force Survey and the Census of Canada to come up with counts of green employment. According to the report, in 2006, British Columbia ranked second in the country in terms of environmental employment with 17.6% of all green jobs in Canada located in the province (ECO Canada, 2007). Ontario had by far the greatest share of the country's environmental employment, at 42.5% and Quebec ranked just behind BC, at 17.3%.

British Columbia ranked second in the country in 2006 in terms of environmental employment

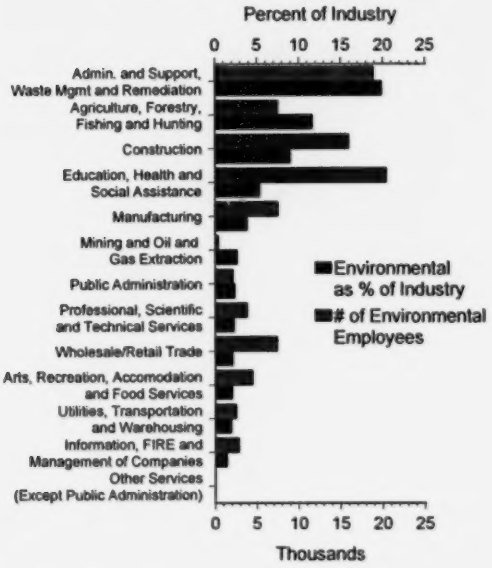


Source: ECO Canada

The industry group with the highest proportion of green employees in British Columbia was the administration and support, waste management and remediation sector. There were 18,869 environmental workers in this sector, or 19.8% of all employees in this industry. Education, health and social assistance had the largest number of green employees of any industry group, at 20,362, which represented 5.3% of workers in these industries. The industry group in BC with the lowest proportion of green workers was "other services," with virtually none of the jobs in that industry involving green activities. Overall, an estimated 4.3% of

the jobs in British Columbia were environmental jobs, a total of 93,462.

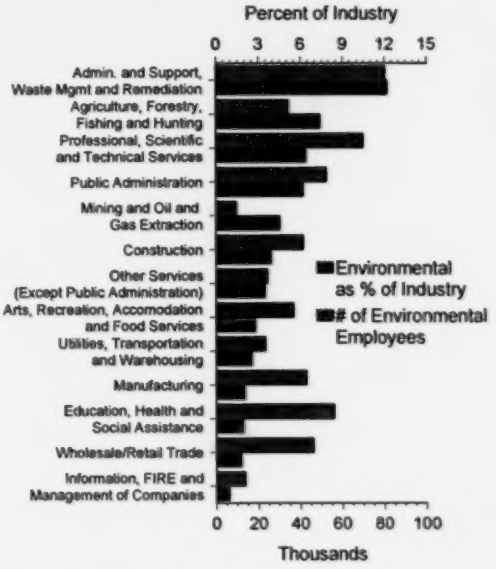
Number of Environmental Employees by Industry Group, British Columbia, 2006


Percent of Industry
0 5 10 15 20 25
Admin. and Support, Waste Mgmt and Remediation
Agriculture, Forestry, Fishing and Hunting
Construction
Education, Health and Social Assistance
Manufacturing
Mining and Oil and Gas Extraction
Public Administration
Professional, Scientific and Technical Services
Wholesale/Retail Trade
Arts, Recreation, Accomodation and Food Services
Utilities, Transportation and Warehousing
Information, FIRE and Management of Companies
Other Services (Except Public Administration)
Environmental as % of Industry
# of Environmental Employees
0 5 10 15 20 25
Thousands

Source: ECO Canada

Compared with the national figures, it appears that environmental jobs in BC are more concentrated in a few specific industries, whereas there is a somewhat more balanced distribution for Canada as a whole. There are also some significant differences in terms of the ranking of industries by proportion of green employees, although the industry groups with the highest proportions of green workers are the same in both cases. Similar to British Columbia, the administration and support, waste management and remediation sector ranked first in Canada, with 12.2% of Canadian employees in that sector working in green jobs. For both BC and Canada as a whole, the agriculture, forestry, fishing and hunting industry group had the second largest proportion of green employees. The differences among the other industry categories are likely the result of differences in industry composition between BC and other provinces.

Number of Environmental Employees by Industry Group, Canada, 2006


Percent of Industry
0 3 6 9 12 15
Admin. and Support, Waste Mgmt and Remediation
Agriculture, Forestry, Fishing and Hunting
Professional, Scientific and Technical Services
Public Administration
Mining and Oil and Gas Extraction
Construction
Other Services (Except Public Administration)
Arts, Recreation, Accomodation and Food Services
Utilities, Transportation and Warehousing
Manufacturing
Education, Health and Social Assistance
Wholesale/Retail Trade
Information, FIRE and Management of Companies
Environmental as % of Industry
# of Environmental Employees
0 20 40 60 80 100
Thousands

Source: ECO Canada

While these figures are useful in themselves, one of the drawbacks of using a survey methodology to determine counts of green jobs is that it will be difficult to find comparable measures from other countries. This is unfortunate because a comparison of the relative sizes of the green workforce in different countries could help explain some of the differences in production of and revenue from environmental activities.

Currently, Canada may be falling behind in terms of production of environmental goods and services. For example, in a study performed in the Netherlands, Canada ranked 23rd out of 44 countries examined in product sales of clean energy technology (van den Berg and van der Slot, 2009, p. 12). Based on the employment data from the ECO Canada survey, British Columbia appears to be ahead of much of the rest of the country in embracing green industries; however, compared with other jurisdictions in other countries, both Canada and the province may still be late off the starting

blocks. Given the nascent nature of the environmental sector, there are economic advantages to being at the forefront of technology development and adoption. Green industries have the potential to be an economic goldmine for those that take advantage of the opportunity.

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TABLE 1
Estimated Distribution of Environmental Employment by Region, 2006

REGION	Estimated Environmental Employment
Atlantic	32,142
Quebec	91,726
Ontario	225,342
Manitoba/Saskatchewan	24,464
Alberta	62,461
British Columbia	93,462
Territories	817
Canada	**530,414**

Source: ECO Canada, Profile of Canadian Environmental Employment

TABLE 2
Number of Environmental Employees in Canada by Major Industry Group, 2006

Industry Group	Number of Environmental Employees	Percent of Industry Total
Administration and Support, Waste Management and Remediation	80,290	12.2%
Agriculture, Forestry, Fishing and Hunting	34,438	7.4%
Professional, Scientific and Technical Services	69,825	6.4%
Public Administration	52,372	6.2%
Mining and Oil and Gas Extraction	9,639	4.5%
Construction	41,273	3.9%
Other Services (Except Public Administration)	24,354	3.5%
Arts, Recreation, Accomodation and Food Services	36,679	2.8%
Utilities, Transportation and Warehousing	23,217	2.5%
Manufacturing	42,836	2.0%
Education, Health and Social Assistance	55,845	1.9%
Wholesale/Retail Trade	46,106	1.8%
Information, Finance, Insurance, Real Estate and Management of Companies	13,542	0.9%
Total - Weighted Data	**530,414**	**3.2%**

Source: ECO Canada, Profile of Canadian Environmental Employment

Weighted on the basis of the number of environmental employees in each province and major industry group. Estimates do not add exactly to total due to rounding.

TABLE 3

Number of Environmental Employees in BC by Major Industry Group, 2006

Industry Group	Number of Environmental Employees	Percent of Industry Total
Administration and Support, Waste Management and Remediation	18,869	19.8%
Agriculture, Forestry, Fishing and Hunting	7,453	11.6%
Construction	15,925	9.0%
Education, Health and Social Assistance	20,362	5.3%
Manufacturing	7,487	3.8%
Mining and Oil and Gas Extraction	343	2.6%
Public Administration	2,125	2.3%
Professional, Scientific and Technical Services	3,774	2.2%
Wholesale/Retail Trade	7,399	2.1%
Arts, Recreation, Accomodation and Food Services	4,429	2.0%
Utilities, Transportation and Warehousing	2,479	1.9%
Information, Finance, Insurance, Real Estate and Management of Companies	2,816	1.4%
Other Services (Except Public Administration)	0	0.0%
Total - Weighted Data	**93,462**	**4.3%**

Source: ECO Canada, unpublished data produced for the Profile of Canadian Environmental Employment report

Weighted on the basis of the number of environmental employees in each major industry group. Estimates do not add exactly to total due to rounding.

TABLE 4

Estimated Number of Establishments Employing Environmental Employees for Selected Industries[1] in British Columbia, 2006

Industry Group	# of Establishments with Environmental Employees[2]	# of Environmental Employees
Administration and Support, Waste Management and Remediation	2,972	18,869
Agriculture, Forestry, Fishing and Hunting	3,558	7,453
Construction	931	15,925
Total - All Industries	**22,537**	**93,462**

Source: ECO Canada, Profile of Canadian Environmental Employment

[1] Three industries with the highest percentage of environmental employees in British Columbia

[2] Estimated using the proportion of firms in each industry employing at least one environmental employee